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*Supplement of*

## **Aura OMI observations of regional SO<sub>2</sub> and NO<sub>2</sub> pollution changes from 2005 to 2015**

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## Supplementary Material

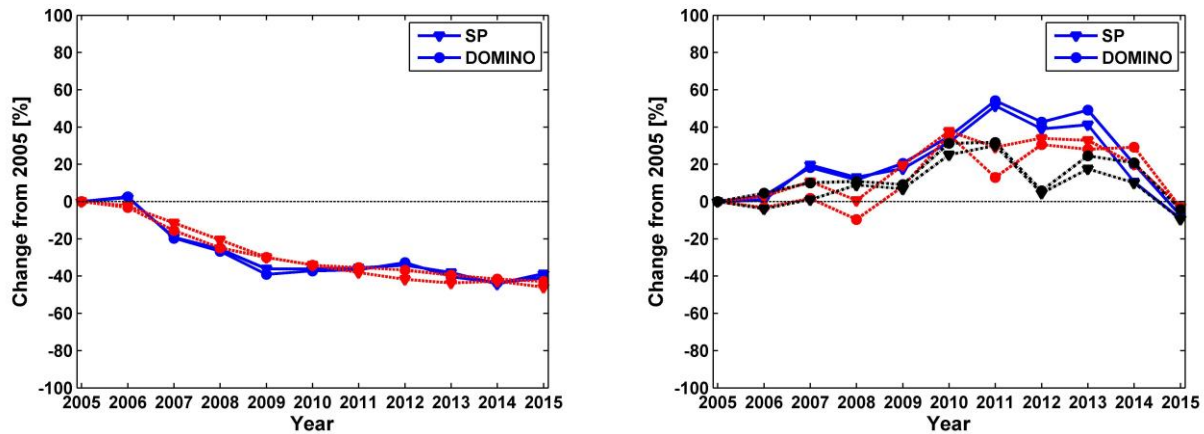
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2 Figure S1. Percent changes in OMI tropospheric NO<sub>2</sub> columns for NASA's SP (triangles) and  
3 KNMI's DOMINO (circles) products for eastern US and eastern China.

4 Figure S2. SO<sub>2</sub>/NO<sub>2</sub> ratio maps over eastern US in 2005 and 2012.

5 Figure S3. Percent changes in OMI (2005-2015) and SNPP OMPS (2012-2015) annual average  
6 SO<sub>2</sub> relative to 2012 for 3 regions in Eastern China.

7 Figure S4. SO<sub>2</sub>/NO<sub>2</sub> ratio maps over Eastern China in 2005 and 2014.

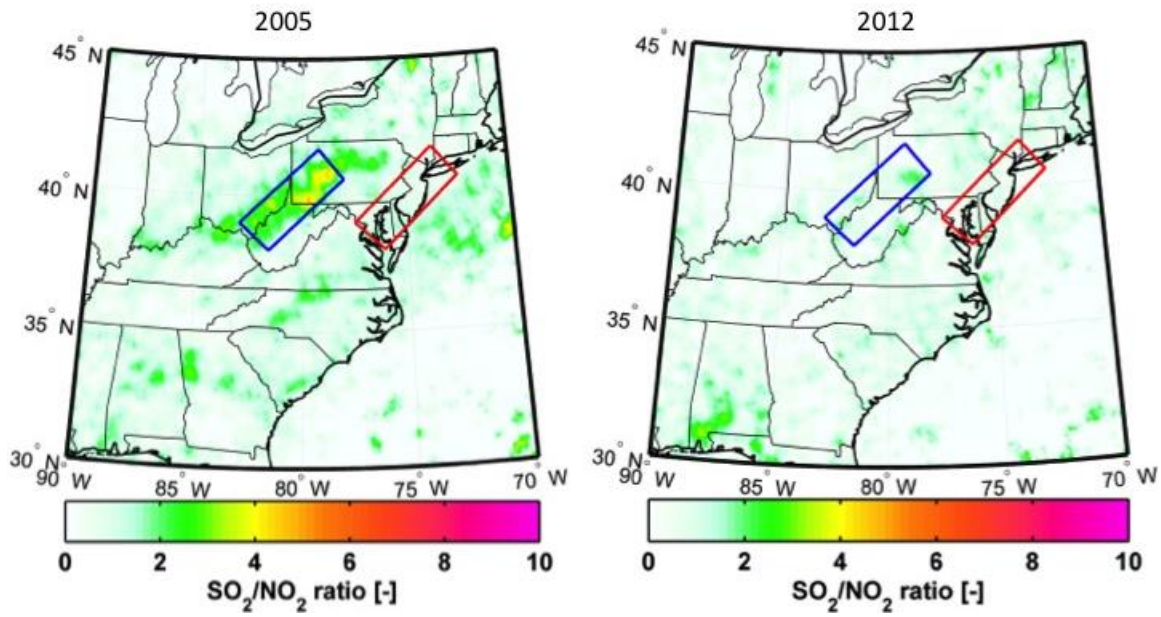
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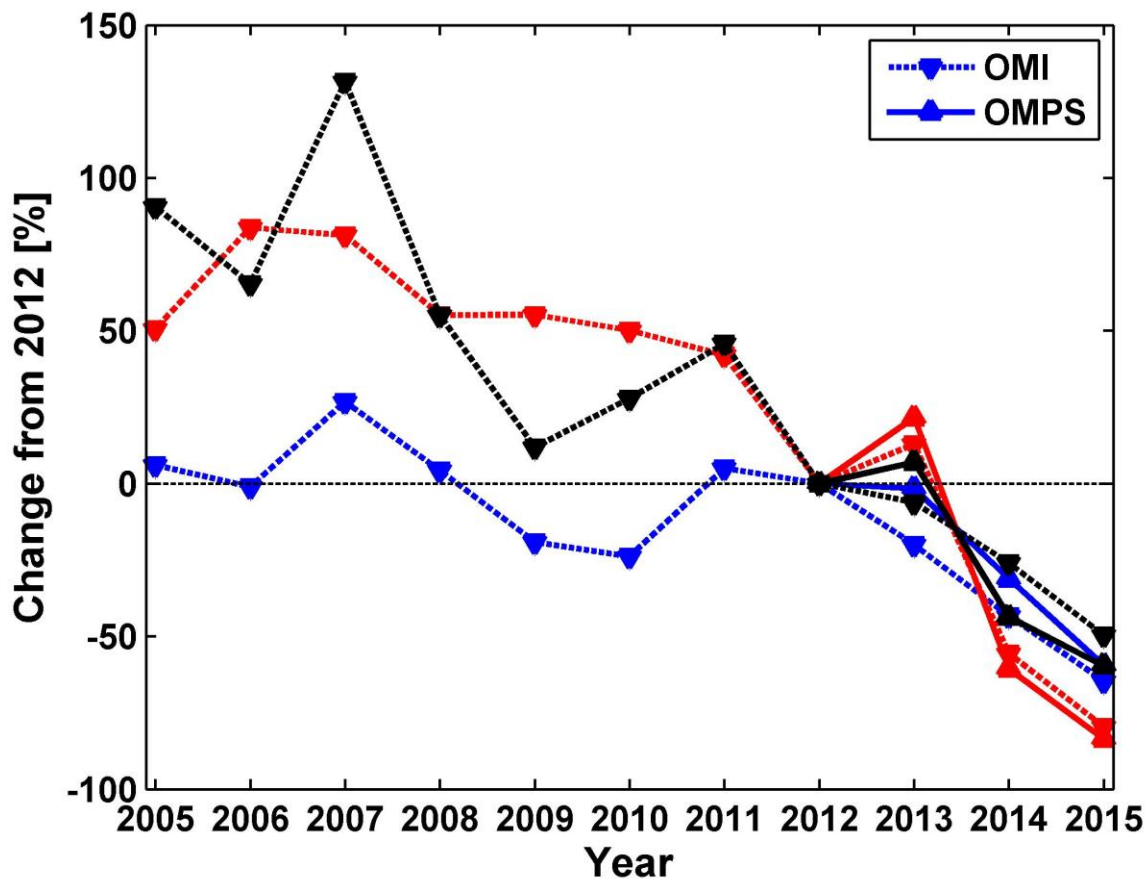
**Figure S1.** Percent changes in OMI tropospheric NO<sub>2</sub> columns are statistically similar for NASA's SP (triangles) and KNMI's DOMINO (circles) products for different study regions. **Left Panel:** Eastern US: blue curves (same as in Fig.3a) represent Ohio River Valley and western Pennsylvania region (ORV - blue box in Fig.2) and red curves represent the Interstate 95 corridor (red box in Fig. 2). **Right panel:** Same over 3 boxes in Eastern China: blue curves represent North China Plane (NCP - blue box in Fig. 5), red curves correspond to the Sichuan Basin (SB - red box in Fig. 5) and black curves represent megacity clusters around Shanghai (Yangtze River Delta, YRD - black box in Fig. 5)

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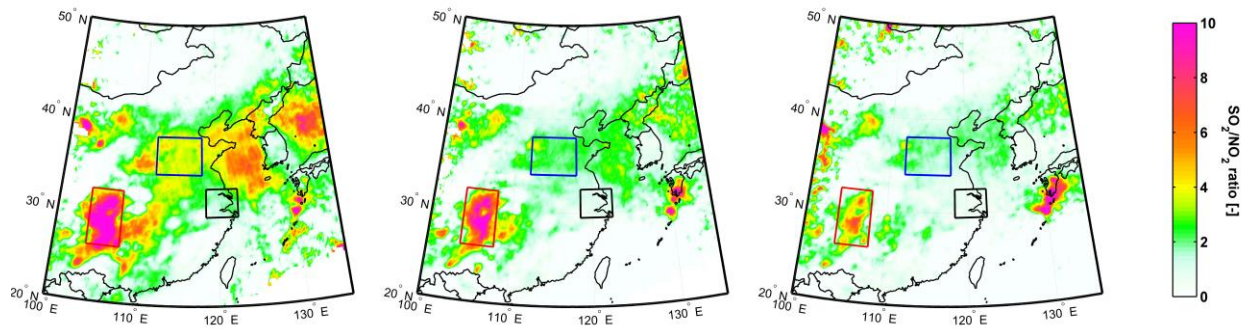
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**Figure S2.** SO<sub>2</sub>/NO<sub>2</sub> ratio maps over Eastern US in 2005 (left) and 2012 (right).



**Figure S3.** Percent changes in Aura OMI (2005-2015, dashed lines) and SNPP OMPS (2012-2015, solid lines) annual average SO<sub>2</sub> columns for 3 different regions in Eastern China: blue curves represent North China Plane (blue box in Fig. 5), red curves correspond to the Sichuan Basin (red box in Fig. 5) and black curves represent megacity clusters around Shanghai (Yangtze River Delta, YRD - black box in Fig. 5)



**Figure S4.** 3 year average  $\text{SO}_2/\text{NO}_2$  ratio maps for 2005-2007 (left), 2009-2011 (middle), 2013-2015(right) over Eastern China. Blue box outlines North China Plane (NCP) also represented in Fig.3, red box - Sichuan Basin (SB) and black box represent Yangtze River Delta (YRD). Enhanced values over Pacific ocean in 2005-2007 are due to eruptions of Anatahan volcano in 2005, Marianna Islands., and Japanese's volcanoes in 2014

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